



Improving the Sailor-Rating Match by Considering Interests: JOIN

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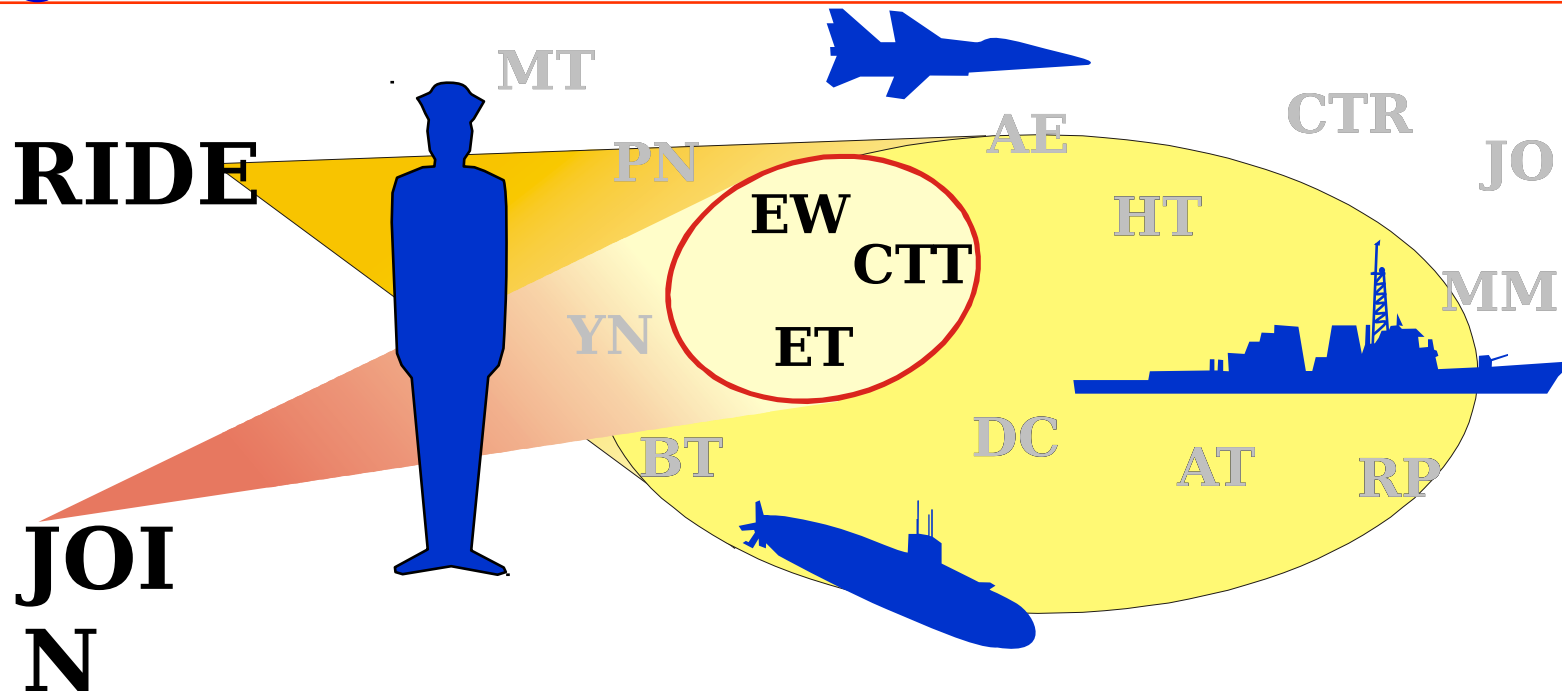
Operational Problem

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- ▮ **Navy classification process fails to encourage enlistment and combat attrition**
 - **Currently emphasizes short-term recruiting quotas over Sailor-rating match**
 - **Does not consider interest/job satisfaction as key variables**
 - **Makes 20-30 year career decisions based on 7-10 minute interview with Navy Classifier**

Aptitude and Interest: RIDE and JOIN

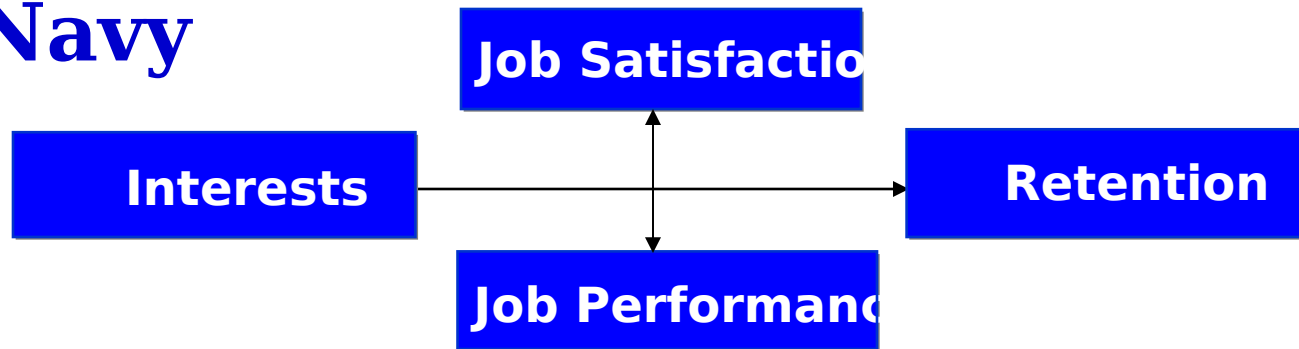
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- ❑ RIDE produces a limited set of ratings a person is qualified for and which have saleable quotas.
- ❑ JOIN filters RIDE selections to program/rating a person is likely to be interested in and satisfied with.

Why JOIN? Jobs & Occupational Interests in the Navy

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- ❑ **Selection and classification decisions based on applicant preferences and interests lead to less “buyer’s remorse”**
- ❑ **In addition, the Navy should expect fewer administrative and disciplinary problems**
- ❑ **Currently, there is no structured means for deriving preferences from naïve applicants**

Previous Research Efforts

- ▣ **Lightfoot, McBride, Heggstad, Alley, Harmon & Rounds (1999)**
 - **Existing civilian and military approaches were considered and rejected**
 - Failed to discriminate between all Navy Jobs (i.e., ratings)
 - Scoring procedures inappropriate for classification algorithms
- ▣ **Lightfoot, Alley, Schultz, Heggstad, & Watson (2000)**
 - **Traditional interest measure developed**
 - Items not easily adaptable to future changes in Navy jobs
 - Comprised of over 600 critical activity statements
- ▣ **Watson (2001)**
 - **The JOIN model was developed such that:**
 - An interest composite can be determined for a rating based on an SME evaluation of the job
 - Such a model eliminates the need for conducting validation studies each time a rating is added or modified

Model Development

- ▮ **Job description documents were collected for 79 Navy jobs; job descriptors extracted into 4 areas:**
 - Environment/style (e.g., indoor, outdoor, mental, physical)
 - Community (e.g., Surface, Construction, Aviation)
 - Process (verb; e.g., maintain, make, train)
 - Content (noun; e.g., facilities, electronics, documents)
- ▮ **Job description composites were created for each rating from initial analysis**
 - Process and Content conjoined to natural pairs; e.g., maintain-mechanical equipment, operate-weapons, analyze-data, etc.
- ▮ **Composites and areas revised through iterative SME interviews**
- ▮ **Pictures collected concurrently with SME input to accurately depict examples from all areas**

Subject Matter Expert Model

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7 Navy Community Areas:

- a) aviation, b) construction, c) health care, d) intelligence, e) submarine, f) surface, and g) special programs

4 Work Styles & 4 Work Environments:

- a) indoor, b) outdoor, c) industrial, d) office, e) mental, f) physical, g) work independently, and h) teamwork

26 Work Activities or Process-Content (PC) pairs:

- **analyze**-communications, -data, -documents
- **direct**-aircraft, -emergency response
- **maintain**-documents, -electrical equipment, -electronic equipment, -facilities, mechanical equipment, -security, -supplies, -weapons
- **make**-communications, -documents, -facilities, -mechanical equipment
- **operate**-electrical equipment, -electronic equipment, -facilities, -mechanical equipment, -office equipment, -weapons
- **respond**-to emergencies, **serve**-customers, **train**-people



Subject Matter Expert Model

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Job Group	Ratings	COMMUNITIES			WORK STYLE			PROCESS-CONTENT PAIRS							
		aviation	construction	submarine	indoor	physical	work with a team	analyze-data	direct-aircraft	maintain-mechanical equipment	make-documents	operate-weapons	respond-emergencies	serve-customers	train-people
Administration and Media	PH	0	0	0	1	1	0	0	0	0	1	0	0	0	0
Aviation Mechanical	AM	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Aviation Technical & Aircrew	AC	1	0	0	1	0	1	1	1	0	0	0	0	0	0
Construction Battalion	BU	0	1	0	0	1	1	0	0	0	0	1	0	0	0
Cryptologic & Foreign Language	CTI	1	0	1	1	0	1	1	0	0	1	0	0	0	1
Health Care	HM	0	0	0	1	0	1	0	0	0	0	0	1	1	0
Legal & Law Enforcement	MA	0	0	0	0	1	0	0	0	0	0	1	1	1	0
Submarine Personnel	MM(SS)	0	0	1	1	1	1	0	0	1	0	0	0	0	0
Supply	DK	0	0	0	1	0	1	1	0	0	0	0	0	1	0
Surface Combat Systems	GM	0	0	0	1	1	1	0	0	1	0	1	0	0	1
Surface Hull & Electrical	IC	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Surface Main Propulsion	EN	0	0	0	1	1	1	0	0	1	0	0	0	0	0
Surface Operations	IT	0	0	0	1	0	1	1	0	0	0	0	0	0	0

Usability & Content Testing

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- ▢ **JOIN DSS tested at Recruit Training Center, Great Lakes**
 - 300 recruits participated on processing day 2-3
 - Conducted discussion groups to gather detailed qualitative information
- ▢ **Participant characteristics:**
 - 72% were male and the average age was 19 years old
 - 59% were Caucasian while 21% percent were African-American
 - The majority indicated that they were experienced computer users, spending an average of 18 hours a week, before boot camp, using a computer
 - Participants averaged 24 minutes to complete JOIN

Community Preference

Navy jobs are organized in the Community areas shown below. Please click on each community you are interested in and move each to the right with the arrow button. Then use the arrows on the right to rank order your communities of interest.



Not Interesting



Construction



Healthcare



Intelligence



Submarine



Surface



More Interesting



Aviation



Special Programs



Less Interesting

Next >>

Navy Special Programs



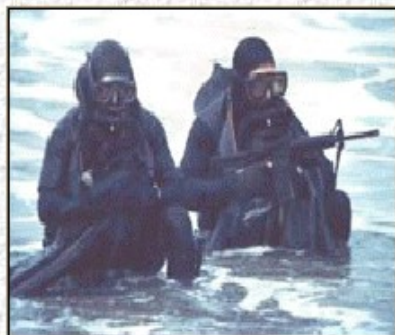
Conduct missions in desert tactics and warfare



Perform missions requiring stealth and camouflage



Sea/Air/Land
(SEAL)



Infiltrate from the sea over the beach



Conduct insertion and extraction of teams using SEAL Delivery Vehicles (SDV)

Answer YES only if you are interested in all 4 activities shown above

Yes

No

Preliminary Analysis - Quantitative

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Community Areas

- Aviation Community most often ranked as top community of interest (33%)
- Submarine Community most often not ranked or not interesting (49%)



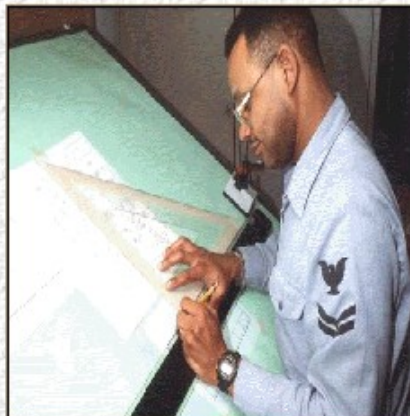
Special Programs

- 217 participants indicated an interest in Navy special programs
- 73% indicated that they were interested in all SEAL activities
- Participants least interested in the activities of Navy Divers (54%)



Work Style Preference

Work independently



Very Interested

80%

Not Interested

Ask for help

Next >>

Preliminary Analysis - Quantitative

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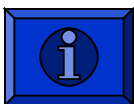
Work Styles & Environments

- Participants indicated a preference for physical teamwork in an outdoor environment

Work Styles	Mean (%)	SD
Lowest interest: Mental work	62.8	30.5
Highest interest: Teamwork	77.5	25.6

Work Environments

Lowest interest: Industrial	44.7	31.2
Highest interest: Outdoor	79.6	27.3



Work Activity Preference

Direct Aircraft

Organize, dispatch and guide airplanes and helicopters.



Very Interested



86%

Not Interested

Ask for help

Next >>

Preliminary Analysis - Quantitative

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- **26 Work Activities (PC Pairs)**
- **Adequate internal consistency for individual item “triplets”**
 - average $\alpha = 0.90$; min $\alpha = 0.83$, max $\alpha = 0.95$
- **Factor Derived Scales**
 - 10 factors identified (average $\alpha = .94$)
 - Administrative Activities ($\alpha = .96$)
 - analyze-communications, analyze-data, analyze-documents, make-communications, make-documents, operate-office equipment
 - Ordnance Activities ($\alpha = .93$)
 - maintain-weapons, operate-weapons

Preliminary Analysis - Quantitative

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- **Work Activities (cont.)**
- **Initial descriptive statistics indicate that participants provided differential responses both across and within work activities**

Work Activity	Mean (%)	SD
Overall interest	46.9	34.7
Lowest interest		
Operate Facilities	35.1	31.4
Highest interest		
Operate Weapons	72.7	29.6



Preliminary Analysis - Qualitative

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▢ Usability analysis was favorable

- People liked the interface
- People felt that the pictures gave a better impression of what jobs entailed than verbal information alone

▢ Some suggestions were made

- Redundancy of items
- Tutorials were unnecessary

▢ Their feedback served as basis for software modifications

- Slider bar modified to restrict erroneous responses
- Items ordered in blocks to reduce feeling of repetitiveness

Future Directions

- ▮ **Collect data at RTC Great Lakes (~ 5,000) for analysis of vocational preference structure and interface design**
- ▮ **Validate SME model**
 - Using independent groups (e.g., “detailers”, instructors)
 - Additional confirmatory statistical analyses
- ▮ **Track Sailors for criterion-related validation**
 - Attrition and retention
 - Technical training success
 - Performance evaluations and career success factors